CLAIMS

What is claimed is:

1. A method for assessing the performance of a hearing aid that includes an implanted hearing aid actuator, comprising:

positioning a test measurement device external to a patient having the implanted hearing aid actuator;

utilizing the test measurement device to obtain at least one impedance measure of the actuator responsive to an electrical signal passing through the actuator; and,

employing the at least one impedance measure to assess the performance of the actuator.

2. The method of Claim 1 wherein the employing step includes:

comparing the at least one impedance measure to a first predetermined range to assess a first performance parameter.

3. The method of Claim 2, further comprising:

providing an output indicative of whether the at least one impedance measure is within the first predetermined range.

4. The method of Claim 2, wherein the employing step, includes:

comparing the at least one impedance measure to a second predetermined range to assess a second performance parameter, wherein the

second predetermined range is at least partially non-overlapping with the first predetermined range.

5. The method of Claim 4, further comprising:

providing an output indicative of whether the at least one impedance measure is within the second predetermined range.

6. The method of Claim 4, further comprising:

providing at least one predetermined test signal for use in generating the electrical signal passing through the actuator.

7. The method of Claim 6 wherein the at least one predetermined test signal has a frequency within a predetermined range of a resonant frequency of the actuator.

8. The method of Claim 6 wherein the utilizing step includes:

inductively coupling the at least one test signal between an external transmitter and a subcutaneous coil, wherein the subcutaneous coil provides the electrical signal to the actuator.

9. The method of Claim 6 wherein the utilizing step includes:

providing the at least one test signal to an implanted microphone, wherein the implanted microphone provides the electrical signal to the actuator.

10. The method of Claim 7 wherein comparing the at least one impedance measure to the first predetermined range to asses the first performance parameter includes:

using an impedance measure obtained in corresponding relation to the resonant frequency to determine if the hearing aid is operational.

11. The method of Claim 10 wherein the step of comparing the at least one impedance measure to the second predetermined range to asses the second performance parameter includes:

using the impedance measure obtained in corresponding relation to the resonant frequency to assess an interface between the actuator and a component of the auditory system of the patient.

12. The method of Claim 11 comprising:

responsive to determining the interface between the actuator and the component of the auditory system is undesirable, repositioning the actuator to achieve a desirable interface.

13. The method of Claim 12 wherein the repositioning step includes:

providing an electrical input to a positioning system to selectively position the actuator relative to the component of the auditory system.

14. The method of Claim 13 wherein the step of providing the electrical input comprises:

providing a wireless signal to the positioning system from a position external to the patient.

15. The method of Claim 13 wherein the step of providing the electrical input comprises:

inductively coupling the electrical input to the positioning system.

16. The method of Claim 1 comprising:

measuring a voltage of the electrical signal passing through the actuator; and

measuring a current of the electrical signal passing through the actuator.

17. The method of Claim 16 wherein the step of utilizing comprises

obtaining the measured voltage and current in the test measurement device; and

computing the impedance measure from the voltage and current measurements.

18. The method of Claim 1 wherein the step of utilizing includes:

providing a plurality of predetermined test signals for use in generating a corresponding plurality of electrical signals passing through the actuator, wherein

the plurality of predetermined test signals includes a corresponding plurality of different frequencies distributed across a predetermined frequency range.

19. The method of Claim 18 wherein the utilizing step includes:

using the test device to obtain a plurality of impedance measures corresponding to the plurality of electrical signals passing through the actuator.

20. The method of Claim 19 wherein the employing step includes:

identifying a resonant frequency of the actuator using the plurality of impedance measures.

21. A system for assessing the performance of a hearing aid that includes an implanted hearing aid actuator, comprising:

a signal generator to output a test signal at a predetermined frequency that generates at least one electrical signal passing through the actuator;

voltage and current measurement logic to measure a voltage and a current of the at least one electrical signal; and

a signal processing unit to process the voltage and current measurements to provide an output usable to assess the performance of the hearing aid.

22. The device of Claim 21 wherein the signal processing unit is configured to compute at least one impedance measure and compare the at least

one impedance measure to a first predetermined range to assess a first performance parameter.

23. The device of Claim 22 comprising:

a user interface to provide a first output, wherein the first output is indicative of the first performance parameter.

24. The device of Claim 23 wherein the signal processing unit is configured to compare the at least one impedance measure to a second predetermined range to assess a second performance parameter, wherein the second predetermined range is at least partially non-overlapping with the first predetermined range.

25. The device of Claim 24 wherein the user interface provides a second output indicative of the second performance parameter.

26. The device of Claim 21 wherein the test signal has a frequency within a predetermined range of a resonant frequency of the actuator.

27. The device of Claim 21 wherein the signal generator is configured to provide a plurality of predetermined test signals for use in generating a corresponding plurality of electrical signals passing through the actuator, wherein

the plurality of predetermined test signals include a corresponding plurality of different frequencies distributed across a predetermined frequency range.

28. The device of Claim 27 wherein the voltage and current measurement logic is configured to measure a plurality of voltage and current measurements corresponding to the plurality of electrical signals passing through the actuator.

29. The device of Claim 23 wherein the first performance parameter indicates if the hearing aid is operational.

30. The device of Claim 25 wherein the second performance parameter indicates a status of an interface between the actuator and a component of the auditory system of the patient.

31. The device of Claim 21 wherein the signal generator comprises:

an oscillator for generating the test signal;

a test control processor to set the oscillator to generate the test signal; and

a reference transmitter to provide the test signal to the actuator.